



Naval Health Research Center

First Quarter

WINTER 2013

Corpsmen

Study

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World AIDS Day

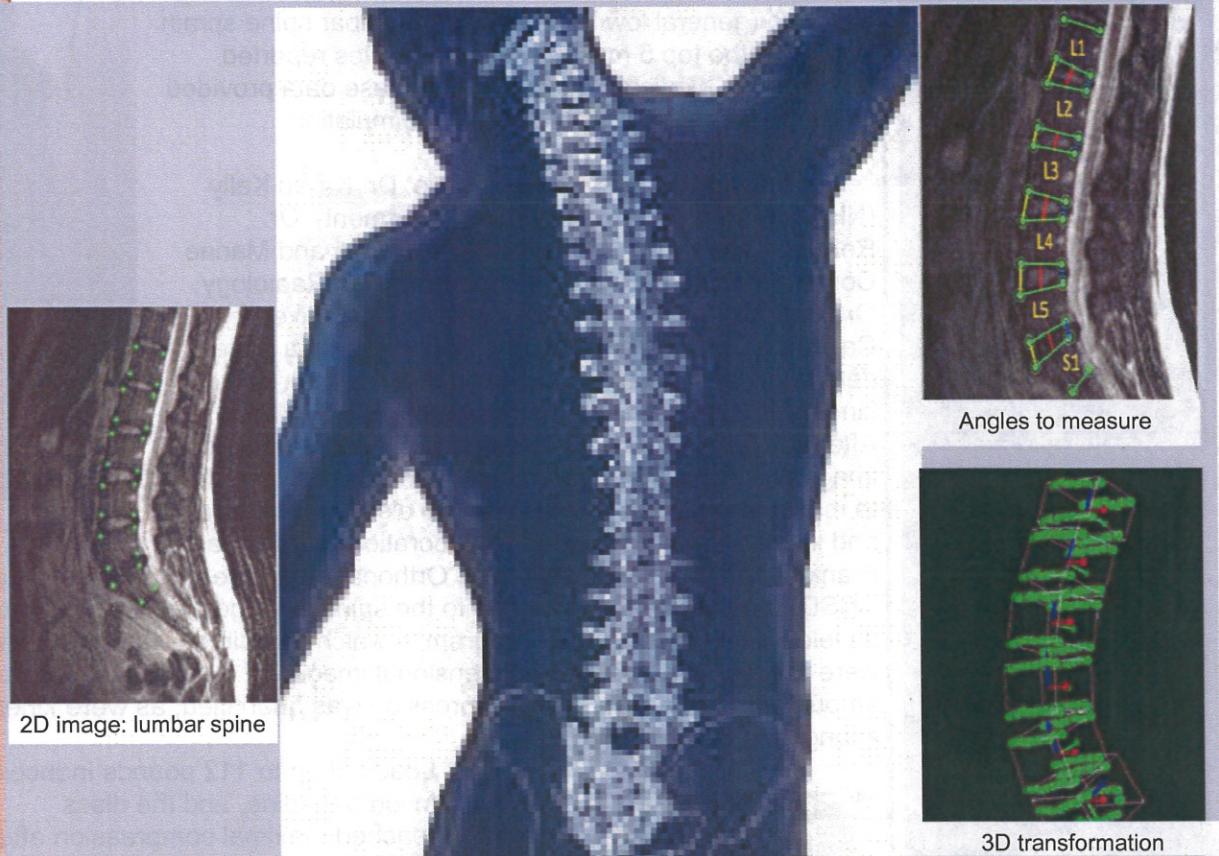
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Load Carriage

The weights of loads carried into battle pose an injury and performance problem for U.S. Marines. Marine Corps assault loads range from 97 pounds for the rifleman to 134 pounds for the squad leader. These are well in excess of the recommended assault load of 30% of body weight (regularly generalized to 50 pounds). This is a problem for all dismounted U.S. forces.

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The Effects of Load Carriage

A recent survey of both battle and nonbattle injuries reported in theater between 2007 and 2011, indicate that lumbago (general low back pain) and lumbar spine sprain are still in the top 5 musculoskeletal injuries reported (Emergency Medical Evacuation Database data provided by the NHRC Medical Modeling and Simulation Department).

In an attempt to address this issue, Dr. Karen Kelly (NHRC Warfighter Performance Department), Dr. Rebecca Jaworski (Warfighter Performance and Marine Corps.) and Dr. Sam Ward (Departments of Radiology, Orthopaedic Surgery, and Bioengineering, University of California San Diego [UCSD]) collaborated on a project to determine the effects of load carriage on lumbar spine kinematics, as well as on performance in U.S. Marines. After validation of a clinical vertical magnetic resonance imaging (MRI) as a research tool, researchers were able to measure changes in intervertebral disc compression and kinematics of the spine. Collaboration with Dr. Larry Frank (Departments of Radiology, Orthopaedic Surgery, and Bioengineering, UCSD) provided further insight into the spinal changes observed through the development of a computer program in which two-dimensional MRI images were transformed into three-dimensional images of the spine. In so doing, the amount and location of disc compression was quantified, as were kinematic changes of the spine.



Marine in vertical MRI



Push-up with ammo cans

Loads of up to 112 pounds induced changes in lumbar spine, and the discs reached maximal compression after 45 minutes of load carriage. Acute changes were reversible with rest; however, we observed that with chronic load carriage (i.e., after 40 days of infantry training), there were greater changes in lumbar lordosis. Further, Marines with training tended to shift their weight forward and induce flexion of the spine that caused anterior compression and posterior distraction. Of interest was finding nearly 37% of Marines entering into the School of Infantry (SOI) present with asymptomatic anomalous MRI indicators spine and/or disk damage. Future studies will need to determine whether these

indicators are eventually associated with back injury pain symptoms.

In addition to measuring alterations in spine kinematics with load, we assessed changes in ground combat element performance

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High-Level Visitors



Mr. Joseph Marshall
Deputy Chief of Resource Management
Comptroller
Navy Bureau of Medicine and Surgery



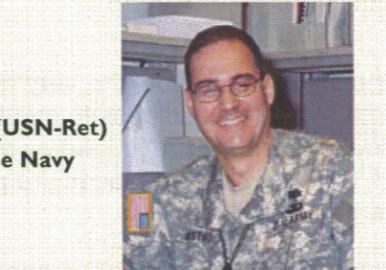
Vice Adm. Harold Koenig, M.D. (USN-Ret)
former Surgeon General of the Navy



Michael Kilpatrick, M.D.
Director, MHS Strategic Communications



Mr. Hugh Montgomery
Senior Fellow
Potomac Institute for Policy Studies



Col. Carl Castro
Director, Military Operational Medicine
Research Program (MOMRP)

Command staff were visited by **Mr. Hugh Montgomery** on 4 December 2012. Mr. Montgomery is a retired Senior Executive Service (SES) who served for 4 decades in a variety of senior positions. These include Special Assistant for Science and Engineering on the staff of the Assistant Secretary of the Navy, Executive Director of the Institute for Defense and Homeland Security, and Resource Sponsor of the Navy's entire \$3B RDT&E account. The purpose of his visit to NHRC was to talk about his book titled, "Bureaucratic Nirvana: Life in the Center of the Box," which focuses on the machinery of the Pentagon's RDT&E programs, and his personal thoughts on the DoD RDT&E business.

Command staff were visited by **Mr. Joseph Marshall** SES, BUMED-M8, on 16 October 2012. CAPT Gregory Utz provided the command brief, Dr. Karl Van Orden provided a short brief on the Research Project Manager–Enterprise (eRPM), and Mr. Marshall provided an overview of current travel issues and on BUMED activities moving toward a state of "audit readiness" at all times.

The External Advisory Board (EAB) meeting for the Millennium Cohort Study and the Scientific Review Panel meeting for the Family Study occurred on 6–7 November 2012. Study updates were presented to the advisory boards, study sponsors, and representatives from the VA central offices and DoD Health Affairs. EAB membership includes subject matter experts (academicians, researchers with experience in longitudinal studies), VA and Veterans Service Organization representatives, and a DoD Health Affairs representative. **Col. Castro**, VADM Koenig (Ret.), and **Dr. Kilpatrick**, SES, are among the members of the EAB.

NHRC's Annual Chili/Brownie Cook-Off & Halloween Costume Contest

Every year in early October, NHRC staff begin the annual ritual of pulling out old (or new) recipes, gathering ideas, and decorating office spaces, getting ready for the most highly anticipated event of the year. This year's event was no exception.

October 31st is not only Halloween, but a day for NHRC staff to display some of their amazing culinary skills as well as imagination and creativity with their costumes.

With the chili varying from the very mild to a burn-your-gut spicy, and the brownies ranging from yummy marshmallow gooiness to creative pieces of art, there were plenty of choices. Each year, all the cook-off entries are judged by anonymous "tasters," and the winners of 1st, 2nd, and 3rd places are presented with medallions after everyone gets a belly full.

Costumes are also judged anonymously by other staff members who are mingling and enjoying the food. After the costume parade and occasional skit, the 1st, 2nd, and 3rd place winners of group costumes and individual costumes are awarded with a trophy and medallion.

From the blood-spitting zombie to the hilarious group of our beloved CDR Deb White (in various stages), all were applauded for their creativity and imagination.



Hail and Farewell CDR Deborah White
"Imitation is the sincerest [form] of flattery." —Charles Caleb Colton (1780—1832)

Load Carriage

Continued From p. 2



Casualty drag

performed in the Marine Corps Physical Fitness Test. Moreover, we found training mitigated the inflammatory protein response following heavy exercise. A linear decrease in resting cortisol with time was also observed. We found no correlation with dropout and fracture incidence with any biomarkers. There was no observable change in creatine kinase measured from baseline, pre to post 5-k hike or pre to post 20-k hike, indicating that the increase in intensity and load did not increase muscle damage. We found a significant increase in osteocalcin from baseline to day 40 of training, which suggests an increase in bone turnover; increased plasma osteocalcin is also indicative of stress

fractures. Anecdotally, we observed many Marines who had stress fractures that went unreported; thus, our measured increase may be reflective of the fact that Marines may have had minor stress fractures that were not debilitating enough to halt training.

Overall conclusions from these studies suggest that load carriage induces changes in lumbar spine kinematics over time. How these changes will affect the health of a Marine is not clear at this time. While basic infantry training showed no direct impact on disc and spine health, 37% of Marines entering SOI already have preexisting back pathologies. It is not known whether disc and back health will change beyond 40 days. However, it is evident that improvements in screening or documentation of injuries prior to SOI are needed. Load carriage did



Ammo can run

not appear to induce further damage of bone or muscle, and genetic predisposition to injury did not predict failure. Inflammatory and stress proteins were reduced with time in training, confirming classical exercise training literature on the effects of exercise training on improvements in immunity and stress reduction. Additionally, load carriage did affect performance, and based on the data, loads carried in excess of 30% BW severely limit operationally relevant tasks as well as marksmanship. Of note, the average load carried by Marines at SOI was between 44% and 93% BW, depending on military occupational specialty (MOS). While MOS is not determined by size, it is recommended that body weight and size should be a factor for MOS determination in the infantry units much like it is in other services and specialties.

—By Karen Kelly, Ph.D

and marksmanship under 4 different load conditions (neat, 15%, 30%, and 45% body weight [BW]). Results indicated there was a nonlinear relationship between load and performance/marksmanship. Short aerobic performance was not significantly impacted until the load was 30% BW and ground combat element time increased significantly. Shooting precision was affected at 45% BW in both the control and the post-ground-combat element task test condition, suggesting that at a load of 45% BW, mobility is significantly impacted independent of fatigue.

A final component of the study was examination of genetic and hormonal markers of injury. We determined that genetic predisposition to injury was not indicative of developing musculoskeletal injuries or failure to graduate from SOI. However, we did discover that genetic variations associated with muscle damage and inflammation were linked to maximal pull-ups achieved and run times



Grenade toss



Shooting task

Enhanced Immersive Training for Hospital Corpsmen: Demonstration and Assessment



There is a loud shot, and then a streaking rocket from across the street hits a building with an explosion near a group of Marines on foot patrol. A Marine is down, his leg severed at the thigh. He is screaming in agony while fellow Marines and corpsmen move him inside the building and begin treating his wounds. They work to apply a tourniquet and check for other shrapnel wounds, discovering a severe chest wound that is inhibiting breathing.

Camp Pendleton. The Marines are mostly students from Fleet Medical Training Battalion – West (FMTB-W) Fleet Medical Service Technician class. In the FMTB-W mock village, these students are completing their final exercise before graduating. The “immersive” training, which includes pyrotechnics, role players, and body-worn wound-simulator suits, is being evaluated by the Naval Health Research Center, under sponsorship of the BUMED Wounded, Ill, and Injured program office.

“The idea for this effort came from what I observed at the Infantry Immersive Trainer at Camp Pendleton,” explains Dr. Karl Van Orden, NHRC’s Director of Research and Development and the project lead. “The IIT is used to train infantry squads in the tactics, techniques and procedures of operating within the Afghanistan village environment. It’s considered by many to be the best predeployment training infantry Marines receive. The IIT has a very realistic environment with role players, RPGs, IEDs, and small arms fire. The idea behind the IIT was to give Marines a taste of asymmetric and irregular combat before they got into theater. We started looking at mental resilience within the IIT several years ago, and given the significant stressors faced by Navy corpsmen assigned to infantry units, I thought that we should try some of this technology on corpsmen, in order to better prepare them for the battlefield.”

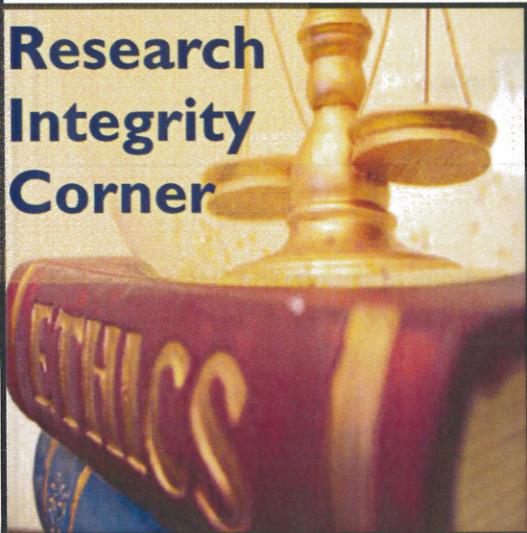
NHRC sought to identify the appropriateness, feasibility, and cost associated with this type of training and solicited the support of Booz Allen Hamilton (BAH) to help answer those questions. Serendipitously, Strategic Operations Inc., which built and supports the IIT, had begun designing

“Great special effects! Outstanding! Best Training I have seen delivered to the students in the 1.5 years that I’ve been here,”

— FMTB-W instructor

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Research Integrity Corner



Can you recognize Research Misconduct?

You're asked to participate as a reviewer in a peer review of an article destined for publication in a renowned scientific journal. To be recognized by peer contemporaries as a subject matter expert is a coveted research plane testifying to quality scholarship and professional noteworthiness. As a reviewer, it is important to keep in mind the following:

1. All material under peer review is privileged information. One's role as a selected peer reviewer means remaining impartial. Decisions predicated on peer review should be made as objectively and fairly as possible.
2. Impartiality means being unable to gain any personal advantage from taking one side rather than another. To be *impartial*, an individual must not favor one side over the other or prejudge any of the facts or theories.
3. Peer reviewers should avoid any real or perceived conflict of interests that might arise because of direct competitive, collaborative, or other close relationship with one or more of the authors of any material under review. If there is a question of impartiality or a conflict of interest, reviewers must discuss the matter with the reviewing manager or supervisor. Additionally, a Command Research Integrity Leader or Office of Counsel should be consulted.
4. The reviewed material should not be used to the benefit of the reviewer unless it was previously made public. During the peer review process, reviewers must understand the level of desired protection of the information by its owner. Privileged information must not be shared with anyone unless necessary to the review process, and permission to share the information must be obtained. Additionally, to whom the information was shared must be documented.
5. Peer reviewed information cannot be copied or retained. Privileged information should not be copied or retained or used in any manner by the reviewer unless specifically permitted by the owner of the information (e.g., articles, grants).
6. Individuals should also be aware that possible research misconduct might become apparent during the review process (i.e., plagiarism, fabrication, or falsification). If this comes up during the review, make sure to report it to the editor.

In the News...

Dec. 3, 2012. Diabetes Risk Linked to Low Vitamin D Levels

Low serum vitamin D concentration was associated with an increased risk of developing "insulin-requiring" diabetes in a nested case-control study of active-duty military service members. The study, led by Edward D. Gorham, PhD, MPH, a research epidemiologist from the Naval Health Research Center, San Diego, and assistant adjunct professor in the Department of Family and Preventive Medicine at the University of California, San Diego, was published online September 7 and in the December issue of *Diabetologia*.

<http://www.medscape.com/viewarticle/775570>

Nov. 29, 2012. Navy Medicine Commemorates World AIDS Day

NavyLive. DoDLive.

By Dr. Richard Shaffer, director, Department of Defense HIV/AIDS Prevention Program Communities and countries around the world will take time to commemorate World AIDS Day on December 1st. It is a time for all to reflect on our successes in the fight against HIV/AIDS, support those living with HIV, and remember those that have died.

<http://navymedicine.navylive.dodlive.mil/archives/tag/naval-health-research-center>

Nov. 29, 2012. Army Public Health Command Monitors Post-Tsunami Radiation Registry for DoD

Leavenworth Times (NHRC mentioned)

The U.S. Army Public Health Command played a significant public health role in the aftermath of the March 11, 2011, Japanese earthquake and tsunami. USAPHC responders monitored radiation levels from the damaged Fukushima Daiichi nuclear power plant, checked the safety of water and food, and assessed search-and-rescue dogs coming into the country to assist in finding the missing.

<http://www.leavenworthtimes.com/article/20121129/NEWS/121129192>

Nov 28, 2012. Tomodachi Registry Monitors Japan-Posted Troops, Families

U.S. Department of Defense. (NHRC mentioned)

U.S. Army Public Health Command headquartered here played a significant public health role in the aftermath of the March 11, 2011, Japanese earthquake and tsunami. The command's responders monitored radiation levels from the damaged Fukushima Daiichi nuclear power plant, checked the safety of water and food and assessed search-and-rescue dogs coming into the country to assist in finding the missing.

<http://www.defense.gov/news/newsarticle.aspx?id=118644>

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Navy Medicine Commemorates World AIDS Day

Communities and countries around the world took time to commemorate World AIDS Day on December 1st. It is a time for all to reflect on our successes in the fight against HIV/AIDS, support those living with HIV, and remember those who have died from AIDS.

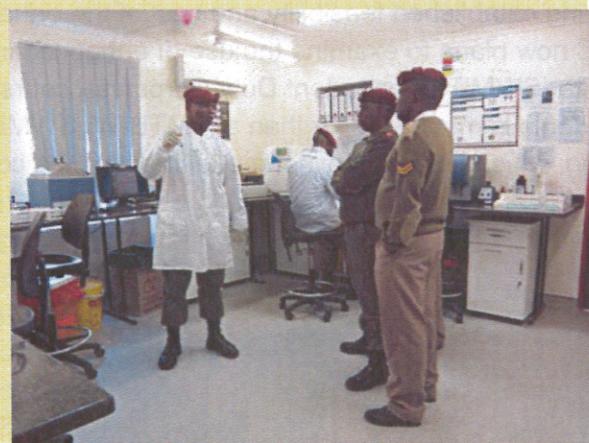
The U.S. Navy has a long tradition of being at the forefront of military medicine regarding infectious diseases in order to ensure that sailors are healthy to maintain force readiness. Since the beginning of the HIV/AIDS epidemic, Navy Medicine has made many important contributions to fighting this disease.

The Navy initiated HIV screening of all applicants for military service beginning in August 1985, only months after the first screening test for the newly identified virus was developed. We began "forcewide" HIV screening for active-duty members 2 months later. DoD leadership knew that they had to aggressively protect the health of the force, but also that traditional military medicine needed to be engaged in the fight against this disease for the benefit of the entire nation and the world. In those early years, rates of HIV infection in military recruits and active-duty members were some of the few "large population" numbers that existed to inform the nationwide medical community and the public about the early nature of the epidemic.

U.S. Navy researchers also made significant contributions to understanding the changing dynamics of HIV through typing and surveillance of the many variants of the virus as the epidemic continued its geographic progression around the world. Again, data from military researchers and clinicians uniquely informed the nationwide medical community and the public about the nature of the epidemic.

U.S. Navy personnel are often stationed or deployed overseas, creating an initial concern that sailors were more at risk of HIV infection during stops at foreign ports. The Naval Health Research Center (www.med.navy.mil/sites/nhrc) in San Diego, California, maintained all Navy HIV screening results. Researchers took this information, along with ship movement data of frequently visited foreign ports, to examine whether sailors were acquiring HIV during deployments. Results showed that despite the high mobility of Navy ships and its sailors, there were no increased risks of HIV infection in foreign ports. This important finding led to added attention to the risk for sailors in home ports where a large number of HIV infections occurred.

Research such as this provided a firm foundation to wage war against HIV/AIDS. However, we knew to stop the spread of HIV in troops now we needed a "tool box" of interventions that could be implemented forcewide quickly, and more importantly were effective. The U.S. Navy led the military-wide effort in developing and



Laboratory personnel from the Lesotho Defense Force (LDF) demonstrate the newly renovated lab capabilities to LDF officers. The DoD HIV/AIDS Prevention Program provides technical assistance and resource support to the LDF HIV prevention program.

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Corpsmen Study

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and building body-worn medical trauma simulator suits (called "Cut Suits"), and very lifelike medical training mannequins. Strategic Operations is a spin-off company of Stu Segal Productions, a San Diego movie studio that brings Hollywood technology to the military, police, and now medical training environments. When worn by a role player/actor, the Cut Suit and severed thigh, which bleeds profusely, make for a highly compelling and immersive situation for the corpsman.

An analysis of various training venues and plans of instruction by BAH brought NHRC to FMTB-W, where throughput in terms of number of students is fairly high, and such training might be cost effective. Three exercises have now been completed, earning high praise from both students and instructors.

"Great special effects! Outstanding! Best Training I have seen delivered to the students in the 1.5 years that I've been here," remarked one of the FMTB-W instructors. Students have also been very positive. The cost per student for the enhanced training is actually quite reasonable, given the class sizes at FMTB-W. CAPT Mike Eby, Commanding Officer of FMTB-W, has discussed long-term operational support for the enhanced training with US Marine Corps Training and Education Command leadership.

Having established feasibility and cost of the enhanced training at a large training venue like FMTB-W, NHRC now plans to examine the use of enhanced immersive training in the Surface Warfare Medical Institute (SWMI) Independent Duty Corpsman course (Corpsman designation 8425). Although the number of students is much smaller than at FMTB-W, SWMI is attempting to replace the trauma treatment and care training, which uses an animal model that is quite costly and controversial. The skills that need to be

mastered leading to the 8425 designation are much greater than those of an 8404. "We are eager to move in this direction and use the Cut Suits and other enhancements. This approach may actually allow more of our IDC students to get 'hands-on' training in our final class evolution," stated SWMI's Officer in Charge, CAPT Steve Banks.

"We're also going to try and look at skills mastery," explains Van Orden. "That's the million dollar question. At the end of the day, will this type of enhanced training lead to better performance on the battlefield? Everyone believes that it will, but it would be nice to have some objective data to support that."



Arterial Hemorrhage Clamping



Surgical Chricothyroidotomy

In the News

Continued From p. 8

Nov. 27, 2012. Military Medicine's Contribution to an AIDS-Free Generation

AIDS.GOV. (Mentions NHRC and WRAIR)

As we look forward to World AIDS Day this year, I'm amazed at how far we've come in the battle against HIV and how effectively U.S. government agencies continue to work collaboratively toward an AIDS-free generation. At the U.S. Department of Defense (DoD) HIV/AIDS Prevention Program (DHAPP) we support HIV prevention programs around the world—in 70 countries—providing and expanding HIV prevention, care, and treatment support for active-duty military personnel, dependent family members, and surrounding civilian communities. To see how far we've come, we have to look back 30 years to where we began.

<http://blog.aids.gov/2012/11/military-medicines-contribution-to-an-aids-free-generation.html>

Nov. 15, 2012. Vitamin D Deficiency Linked to Type 1 Diabetes

U.S. San Diego Health System

A study led by researchers from the University of California, San Diego School of Medicine has found a correlation between vitamin D3 serum levels and subsequent incidence of Type 1 diabetes. The 6-year study of blood levels of nearly 2,000 individuals suggests a preventive role for vitamin D3 in this disease. The research appears the December issue of *Diabetologia*, a publication of the European Association for the Study of Diabetes (EASD). The study was supported by a Congressional allocation to the Diabetes Research Institute of the University of Miami through the Naval Health Research Center, San Diego, California.

<http://health.ucsd.edu/news/releases/Pages/2012-11-15-vitamin-D-and-type-1-diabetes-link.aspx>

Nov. 8, 2012. SAIC Pulls in \$242M in Healthcare Contracts, Steve Comber Comments

GovConWire.

SAIC (NYSE: SAI) has won several contracts this quarter, totaling approximately \$242 million from the government and commercial healthcare industry, the company announced today. The biggest contract award that the company won this quarter was a Naval Health Research Center R&D contract worth \$24 million.

<http://www.govconwire.com/2012/11/saic-has-won-242m-in-healthcare-contracts-this-quarter-steve-comber-comments/>

Nov. 5, 2012. In Session With: Stephanie Booth-Kewley.

Psychiatry Weekly

This article features a short Q&A on anxiety, depression and deployment-related stressors in Marines.

<http://www.psychweekly.com/>

AIDS Day

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implementing successful HIV/AIDS behavior change communication activities and comprehensive prevention. Modules incited behavior change and educated troops about the risk of HIV at home and on deployments. The Navy also created *Prevention with Positives*, the first HIV prevention training specifically targeted toward those who already had HIV. This strategy educates HIV-positive troops and their families so that they know how to reduce the risk of transmitting HIV.

Due to the Navy's expertise in HIV prevention, research, and clinical care, the DoD, along with the Centers for Disease Control and Prevention and the U.S. Agency for International Development, was asked to participate in the U.S. Leadership and Investment in Fighting an Epidemic (LIFE) Initiative in 2000 to help fight the HIV/AIDS epidemic in Africa and India. The U.S. Navy was designated as the Executive Agent for the DoD LIFE Initiative, later to be renamed the DoD HIV/AIDS Prevention Program (DHAPP) (<http://www.med.navy.mil/sites/nhrc/dhapp/Pages/default.aspx>), with responsibility for program management assigned to the NHRC.

Pursuing HIV/AIDS activities with foreign militaries is clearly tied to security interests, regional stability, humanitarian concerns, counterterrorism, and peacekeeping efforts due to the impact of HIV/AIDS as a major destabilizing factor in developing countries. In fact, in the Security Cooperation Guidance, the Secretary of Defense identified HIV/AIDS in foreign militaries as a national security issue.

Since 2003, DHAPP has played a key role in preventing HIV in foreign militaries through the U.S. President's Emergency Plan for AIDS Relief (PEPFAR) (www.pepfar.gov) as the DoD implementing agency for the initiative. Foreign militaries frequently have HIV infections rates similar to the surrounding civilian populations, yet they remain a population with increased HIV risk factors, including high mobility and separation from partners. Due to security issues and the stigma surrounding HIV/AIDS, foreign militaries are typically more amenable to working with U.S. counterpart defense representatives. Therefore, the DoD plays a critical role in galvanizing foreign militaries to take preventative action against the spread of this disease.



HIV technical advisors from DHAPP trained military personnel in the Sudan People's Liberation Army (SPLA) as peer educators in South Sudan. The SPLA is one of 70 partner militaries that DHAPP currently supports around the globe.

DHAPP continues its efforts today to combat HIV/AIDS among respective military services implementing bilateral and regional strategies in coordination with respective Combatant Commands and PEPFAR Country Teams. Funding through PEPFAR and the Defense Health Program ensure that militaries around the world are not hindered by morbidity and mortality affecting deployment cycles and troop levels.

—By Richard Shaffer, Ph.D.,
Director, Department of Defense
HIV/AIDS Prevention Program

COMMAND HIGHLIGHTS

1 - 4 OCT 2012: Ms. Marzano and Ms. Niederberger have started a new project working with the OASIS residential rehabilitation program center, at Naval Base Point Loma. They are working with the recreational therapist, and are in the process of restructuring their exercise program. They will also be incorporating a study that will examine whether a regular aerobic routine improves PTSD symptoms. Ms. Marzano has been working on the IRB protocol for this future study, as well as plans to restructure their program.

4 OCT 2012: Staff from the Operational Infectious Diseases Department (CDR Brice, LCDR Lee, Mr. Hawksworth, Dr. Myer) met with the Navy Marine Mammal Program and National Marine Mammal Foundation at NHRC to discuss collaborations and participation in the Defense Threat Reduction Agency-funded Working Group to Assess the Pandemic Potential of Ocean-borne Pathogens. The goals are to assess (a) risks of novel pathogens in marine mammals, (b) crossover from ocean to humans, (c) parallel physiological susceptibilities among humans and marine mammals to similar pathogens, (d) human-ocean animal recombination events in shared pathogens, and (e) exposure by humans to ocean-borne pathogens of pandemic potential. NHRC will support novel pathogen discovery and outbreak support.

9–12 OCT 2012: Mr. Wing reported that the Joint Medical Planning Tool (JMPT, formerly Tactical Medical Logistics Plus, or TML+) was approved for use on Navy Medicine's network. The intent is to also make JMPT accessible via non-Navy Medical (NAVMED) Navy networks (e.g., Information Technology for the 21st Century, Military Health System Cyberinfrastructure Services, OCONUS Navy Enterprise Network, and more). The Certification and Accreditation package to broaden the Authority to Operate (ATO) was uploaded into the Information Assurance Tracking System (IATS), which locks down the security scans and begins the process for Navy and DoD-wide acceptance of this flagship tool. The Navy Office of Designated Approving Authority has agreed to review the package in IATS and initiate ATO/DoD Information Assurance Certification and Accreditation Process efforts and will concurrently review the application for use on non-NAVMED networks.

16 OCT 2012: CDR Herzig presented a lecture titled "Medical Planning in HA/DR" in the Military Operations portion of the Joint Humanitarian Operations Course. The course is offered quarterly at Expeditionary Warfare Training Group Pacific.

18 OCT 2012: CDR Herzig participated in a TELCON with RDML Terry Moulton and other Medical Service Corps (MSC) regarding the Strategic Goals Group. The admiral provided his guidance and direction for the groups as well as discussed the MSC strategic plan for FY13.

29 OCT 2012: The DoD Birth and Infant Health Registry (Registry) was contacted by Fritz Castillo, MPH, an epidemiologist at the US Army Public Health Command Region—Europe (USAPHC), regarding a potential increase in the number of birth defect-related complications at the USAPHC-Vicenza Birthing Center (Center) from December 2011 through May 2012. Among 75 births that occurred at the Center during this time frame, the USAPHC determined that 6 had birth defects. The Registry has preliminarily examined birth defect patterns in response to this inquiry.

31 OCT 2012: The Operational Infectious Diseases Enteric Disease Surveillance Program identified Norovirus from several clinical specimens collected from cases during a recent viral gastroenteritis outbreak aboard USS *George Washington* (CVN 73) while deployed in the Western Pacific.

Continued on p. 15

NHRC RECENT PUBLICATIONS

Booth-Kewley S, Highfill-McRoy RM, Larson GE, Garland CF, Gaskin TA. Anxiety and Depression in Marines sent to war in Iraq and Afghanistan. *J Nerv Ment Dis.* 2012;200:749–757.

Broderick MP, Faix DJ, Hansen CJ, Blair PJ. Trends in meningococcal disease in the United States military, 1971–2010. *Emerg Infect Dis.* 2012;18(9):1430–1437. doi: 10.3201/eid1809.120257.

Eskridge SL, Macera CA, Galarneau MR, Holbrook TL, Woodruff SI, Macgregor AJ, Morton DJ, Shaffer RA. Injuries from combat explosions in Iraq: injury type, location, and severity. *Injury.* 2012;43(10):1678–1682.

Gorham ED, Garland CF, Burgi AA, Mohr SB, Zeng K, Hofflich H, Kim JJ, Ricordi C. Lower prediagnostic serum 25-hydroxyvitamin D concentration is associated with higher risk of insulin-requiring diabetes: a nested case-control study. *Diabetologia.* 2012 Sep 7. [Epub ahead of print].

Harbertson J, Grillo M, Zimulinda E, Murego C, Brodine S, May S, Sebagabo M, Araneta MR, Cronan T, Shaffer R. HIV Seroprevalence, associated risk behavior, and alcohol use among male Rwanda Defense Forces military personnel. *AIDS Behav.* 2012 Oct 19. [Epub ahead of print]

Hurtado SL, Crain JA, Simon-Arndt CM, Highfill-McRoy RM. Substance abuse counselor and client reports of mental health screening and enhanced practices. *Mil Med.* 2012;177(9):1049–1057.

Jacobson IG, Horton JL, LeardMann CA, Ryan MA, Boyko EJ, Wells TS, Smith B, Smith TC. Posttraumatic stress disorder and depression among U.S. military health care professionals deployed in support of operations in Iraq and Afghanistan. *J Trauma Stress.* 2012 Nov 26. [Epub ahead of print].

MacGregor AJ, Tang JJ, Dougherty AL, Galarneau MR. Deployment-related injury and posttraumatic stress disorder in US military personnel. *Injury.* 2012 Nov 5. [Epub ahead of print].

Momen N, Strychacz CP, Viirre E. Perceived stigma and barriers to mental health care in Marines attending the combat operational stress control program. *Mil Med.* 2012;177(10):1143–1148.

Nguyen S, LeardMann CA, Smith B, Conlin AM, Slymen DJ, Hooper TI, Ryan MA, Smith TC; for the Millennium Cohort Study Team. Is military deployment a risk factor for maternal depression? *J Womens Health (Larchmt).* 2012 Oct 10. [Epub ahead of print].

Norris JN, Viirre E, Aralis H, Sracic MK, Thomas D, Gertsch JH. High altitude headache and acute mountain sickness at moderate elevations in a military population during battalion-level training exercises. *Mil Med.* 2012;177(8):917–923.

Phillips CJ, Woolpert T, Sevick C, Faix D, Blair PJ, Crum-Cianflone NF. Comparison of the effectiveness of trivalent inactivated influenza vaccine and live, attenuated influenza vaccine in preventing influenza-like illness among US military service members, 2006–2009. *Clin Infect Dis.* 2012 Nov 26. [Epub ahead of print].

Highlights

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05 NOV 2012: Mr. Wing was informed by CAPT Robert Mitton (OPNAV N81H) that NHRC was selected to conduct a study to examine afloat medical care. The objectives of this study are to analyze throughput of the various amphibious hospital ships in order to validate and update platform capabilities and examine personnel medical augments with the goal of providing actionable recommendations that can help inform Navy decisions of what to develop, field, and procure. Each of the ship classes has unique medical facilities, capabilities, and limitations. In addition to baseline capabilities inherent in these platforms, medical department personnel can be augmented with specialty teams to enhance treatment options, improve medical outcomes, and increase throughput. Given scarce resources and the austere funding climate anticipated in the near future, the impact of staff augmentation must be examined to help inform decisions on how best to employ and deploy medical augmentation teams, how teams should be composed, and how many are necessary given specific scenarios. This 9-month study will begin in January and will seek to answer these questions.

6 NOV 2012: CDR Brice and Dr. Kammerer met with Dr. Denise Borntrager, Officer-in-Charge of the San Diego and El Paso Quarantine Stations from the U.S. Centers for Disease Control and Prevention (CDC) to discuss continued collaborations on infectious disease surveillance activities along the U.S.-Mexico border. An Inter-Agency Agreement will be established between NHRC's Operational Infectious Diseases Department and the Division of Global Migration and Quarantine-CDC Border Infectious Disease Surveillance project to formalize this collaboration.

06 NOV 2012: Mr. Wing reported that the Patient Condition Occurrence Frequency (PCOF) tool verification, validation, and accreditation report was briefed to the Strategic Analysis Work Group on 6 November. This lead to the unanimous decision to recommend that the Force Health Protection Integrating Council grant full accreditation of the tool for use in DoD-wide medical planning. This is a significant milestone for this effort and marks the first time that an NHRC-developed tool will achieve accreditation as a Joint standard.

8 NOV 2012: A report on birth defect rates over time in CONUS, OCONUS and Italy was sent to the U.S. Public Health Command Region-Europe in response to an inquiry about a concern over an increase in birth defects among military members/dependents giving birth at a civilian medical facility in Vicenza, Italy. Dr. Conlin provided an informational sheet to the Public Health Command's epidemiologist using data from the Birth and Infant Health Registry, and a technical report will be written shortly for command review.

14 NOV 2012: NHRC's Medical Modeling and Simulation Department was requested by RADM Kraft, Commander Navy Warfare Development Command, to brief him on the family of NHRC's modeling and simulation tools. A video teleconference with RADM Kraft was scheduled for Wednesday 14 November. RADM Kraft has specifically asked for information on NHRC's Joint Medical Planning Tool (JMPT) which is in the process of being designated by OASD(HA) as the Joint standard for DoD. RADM Kraft's interest stems from the current effort to integrate JMPT into the Naval Warfare Development Command (NWDC) wargaming simulation called the Navy Continuous Training Environment. The result of this NWDC—NHRC collaboration will be the availability of detailed shipboard medical simulation within the Navy wargaming environment.



CAPT Gregory Utz
Commanding Officer

Commanding Officer's Corner

Readiness, Value, and Jointness

Our Surgeon General, VADM Nathan, recently released his Navy Medicine Strategy Map. The strategy focuses on the core areas of Readiness, Value, and Jointness. While the emphasis of these areas is on the timely and efficient delivery of medical care, they are central to what we do here at the Naval Health Research Center, and it is important that we all understand how our mission aligns with these guiding principles.

With respect to readiness, I cannot find one example of research that we do that is not related to readiness, whether it be predeployment physical readiness, mental health issues in theater and after deployment, or working to improve postdeployment rehabilitation and reset for inter-deployment training. Our operational infectious disease surveillance work, vaccine, and rapid diagnostic screening test and evaluation work is all about ensuring health and dealing with infectious agents head-on. NHRC's Medical Modeling and Simulation Department efforts ensure that medical supplies are optimized for the missions and casualty streams we expect to face. Even our DoD HIV/AIDS Prevention Program is viewed by Combatant Commanders around the globe as central to their strategic engagement plans, so that positive relationships are built with the militaries in over 70 countries.

Relative to value, NHRC executes over \$101M per year, while receiving only \$5.3M in base funding from BUMED. With dozens of reimbursable sponsors, NHRC is able to maintain a cadre of over 300 military, government civilian, and contract professionals who are "on call" for BUMED and actively engaged in research, development, and testing and evaluation addressing issues central to operational and expeditionary medicine. Located in a fleet concentration area, NHRC is currently engaged with Navy, Marine Corps, Navy Special Warfare, universities, and industry activities.

Finally, despite our naval-centric location, NHRC remains well connected to our joint partners. Formally, NHRC is designated as the DoD Center for Deployment Health Research, and our Millennium Cohort Study is probably the best example of a research effort focused on all of the services. We have and continue to receive Air Force and Army funding for various projects, and have active collaborations with university, industry, DoD, Non-DoD, Navy, Marine Corps, Army, and Air Force activities.

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Mission: To conduct health and medical research, development, testing, evaluation, and surveillance to enhance deployment readiness of DoD personnel worldwide

Vision: World-class health and medical research solutions anytime, anywhere.